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Actuarial analysis of Agent Orange Program

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From 1961 to 1972 approximately 3.5 million American, Australian, and New Zealand servicemen and women served in or near the Vietnam combat area. During that period, an estimated 20 million gallons of chemical defoliants, the best known of which is Agent Orange, were used to eliminate known or potential enemy hiding places.

In 1979 a veteran sued several major U.S. chemical companies alleging a wide range of health effects from exposure to Agent Orange and other defoliants. In 1983 this suit was expanded into a class action.

In 1984 the claimants and the chemical companies reached a settlement. While admitting no liability, nor any cause-and-effect relationship between the defoliants and any health effects (other than cloracne, a skin condition), the chemical companies agreed to pay \$180 million into a settlement fund.

Under a unique structure established by the court, the fund was to be divided into three parts:

- 1) about 2% for non-U.S. service personnel,
- 2) about 23% for a "class-assistance" fund to establish and fund support organizations to help veterans and their dependents, and

3) the rest for direct "insurance-style" benefits to disabled veterans and the eligible survivors of deceased veterans, based upon a general payment structure established by the court.

In 1988, after all legal challenges to this settlement approach were completed, we began work on the unusual actuarial problem presented by the third part of the fund.

The actuarial problem

The court-established benefit formulas specified benefits in terms of "units." The number of "units" payable was based on the date of incidence of disability or death — the number being reduced if close to the 12/31/94 end of the payment program, and on age — the number being reduced if disability or death occurs later in life. In addition, disability awards were to be annual installments continuing until the earlier of the end of the program or termination of disability.

The purpose of the actuarial analysis was to provide the information necessary to choose dollar values per unit so that the available funds would be sufficient to pay eligible claims filed and to cover administrative expenses.

The model

The population of veterans exposed to Agent Orange is a closed group with a distinct age-sex-race composition that has generated and will

continue to generate eligible deaths and disabilities. However, many eligible veterans or survivors may not utilize the payment program either because, despite extensive publicity, they do not know of its existence or because they believe they are ineligible. This latter cause may be particularly prevalent, because many veterans may not realize they were exposed to Agent Orange.

The estimation of disability claim incidence and duration from a closed group with known characteristics is a traditional actuarial problem, and data are relatively easily available. The same cannot be said, however, of the utilization variable as it applies to this unique case. Further, this variable would be least predictable for the group eligible for the largest awards, namely those with incidence well into the past. These eligible veterans or survivors may have lost contact with veterans organizations or even society in general for various reasons. Nonetheless, a successful analysis required accurate estimation of this group's utilization.

Because of these factors, we decided to separate the estimated claimant group into two parts, those with incidence before 1/1/89, and those with incidence after that date and before the end of the program. The methods for analyzing these two components differed.

For incidence before 1/1/89 we made no attempt to estimate utilization as such. Rather, several circumstances allowed us to project directly the final result, namely, the number of claims actually received by the claims administrator. These circumstances were:

- 1) the program had already received wide publicity,
- 2) mailing of claim kits to those requesting them began in November 1988, and
- 3) payments were to be made beginning February 1989.

Thus, we would be able to directly observe how many kits were mailed, how fast they were returned, and the number and distribution of resulting eligible claims. While not all kits would be returned and processed in time to simply measure all existing

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